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March 31, 1997

Tim Lowe
Closeout Project Manager
Armstrong Data Services, Inc.
2070 Chain Bridge Road
Suite 150
Vienna, VA 22182

Re: Grant No. N00014-92-J-1217

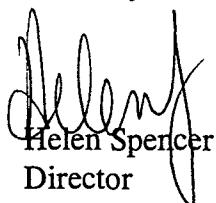
Dear Mr. Lowe:

On behalf of Frederic R. Siegel, the George Washington University is enclosing the final technical report for the above mentioned grant. Also included to accomplish the close-out of this award is the final inventions report, DD Form 882.

The final financial report will be submitted by the University's Grants and Contracts Accounting Services. If you have any questions regarding the final financial report, please call Barry Hickson at (202) 973-1046.

If you have any other questions, please do not hesitate to contact Gianna Rudolph, Post Award Coordinator at (202) 994-6257. We sincerely apologize for the delay and thank you for your patience.

Sincerely,


Helen Spencer
Director

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cc: Barry Hickson

Charles K. Hayes

Barbara M. Thurman (3)

✓Defense Technical Information Center (2)

Naval Research Laboratory (2)

DTIC QUALITY INSPECTED 1

Final Report for Award with DOD/NAVY/ONR (AC12690/91) "Mass Physical Properties of High Latitude Sediments" Award No. N00012-92-J-1217.

The mass physical properties of 86 samples from a suite of 8 cores from the Eastern Novaya Zemlya Trough, Kara Sea, were compiled into a database for statistical analysis. The database also included size characteristics, mineralogy of the $<2\mu\text{m}$ size fraction, and chemical composition (40 chemical elements). The chemical elements include the potentially toxic elements being followed in the Arctic Monitoring and Assessment Program. The size frequency, fine-size fraction mineralogy and chemistry of samples affect the mass physical properties.

In the sample suite used for this project, two principal factors influenced the mass physical properties both spatially and in downcore assessments. The principal factors are porosity and silt size content. There were lesser influences from the other factors assessed which were not significant at the confidence level used for the statistical evaluation. Nonetheless, these additional factors such as the influence of transition metals concentrations and aluminum contents continue to be reviewed.

One Master of Science thesis has resulted from this work. (See listing that follows).

Data set summaries can be obtained by DOD/NAVY/ONR from Professor Siegel, the P.I., Department of Geology, George Washington University, Washington, D.C. 20052.

Publications and presentations that came out as a result of the research are:

Kravitz, J.H. and Siegel, F.R., 1994. Chemical element distribution in the surface sediments in Kane Basin: Jour. of Coastal Research, 10: 101-112.

Lee, J.J., Siegel, F.R. and Kravitz, J.H., 1995. Metals in Novaya Zemlya Trough cores, Kara Sea, Russian Arctic (abs). Presented at the annual meeting, Geological Society of America, 27: 191.

Lee, J.J., Siegel, F.R. and Kravitz, J.H., 1996. Bulk sediment geochemistry and $<2\mu\text{m}$ mineralogy in the Novaya Zemlya Trough, South Kara Sea, Rusian Arctic: Presented at the 26th Annual Arctic Workshop. Institute of Arctic and Alpine Research (INSTAAR), Boulder, CO, March. In Abstracts Volume.

Master of Science thesis:

Lee, J.J., 1997. Geochemistry of Sediment Cores from the Eastern Novaya Zemlya Trough, Southern Kara Sea: Arsenic and Mercury Contamination. George Washington University, Washington, D.C. 20052, 120 p.

Papers In Preparation for Journal Publication:

Spatial and downcore factor analysis of mass physical properties, granulometry, $<2\mu\text{m}$ size mineralogy, and chemistry in a 1965 suite of cores from the Novaya Zemlya Trough, Kara Sea, Russian Arctic (50% completed). (Kravitz, Siegel, Lee and Basinger)

Sediments in the Novaya Zemlya Trough, Kara Sea, 1965: physical-chemical properties and environmental influences (50% completed). (Lee, Siegel and Kravitz)

Work on the Kara Sea sediments but from the Voronin and Santa Anna Troughs is continuing. The following presentations were made on the basis of the continuing work:

Siegel, F.R., Kravitz, J.H. and Hopkins, H.H., 1996. Arsenic and mercury in Kara Sea and Barents Sea sediments (abs.). Presented at the annual, Geological Society of America, 28: A43.

Accepted for Presentation:

Siegel, F.R., Kravitz, J.H., Lee, J.J., Basinger, W.D. and Hopkins, H.H., Distribution and concentration of potentially toxic metals in Kara Sea-Barents Sea sediments, 1965: sources and pathways from mining and industry: To be presented at the 15th European meeting of the Society for Environmental Geochemistry and Health, Dublin, March, 1997.

Siegel, F.R. and Kravitz, J.H., Environmental geochemistry, geochemical exploration: linked principles and processes; contrasting solutions: To be presented at the 19th Int'l Geochemical Exploration Symposium, Jerusalem, May, 1997.

Paper in preparation:

Arsenic and mercury contaminants in Voronin and Santa Anna Troughs sediments, 1965: origins, pathways and environmental impacts (40% completed). (Siegel, Kravitz and Lee)

A comparison of mass physical properties of sediments from the Novaya Zemlya Trough with those in the Voronin and Santa Anna Troughs, Kara Sea. (in initial stages). (Kravitz, Siegel and Basinger)

Fred R. Siegel

2 March 1997